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19. ABSTRACT (Continue on reverse if necessary and identify by block number)
This report covers the annual retest of POP Requirements of wirebound box, part No. 12590218 used as shipping container for 5.56mm small caliber ammunition. This wirebound box contains two PA108 metal containers containing 5.56mm small caliber ammunition for Squad Automatic Weapons. Tests were conducted using additional test weight in order to insure shipping container's integrity.

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ANNUAL RETEST OF

PERFORMANCE ORIENTED PACKAGING REQUIREMENTS

OF

WIREBOUND BOX FOR SMALL CALIBER AMMUNITION

PACKED IN PA108 METAL CONTAINER

FOR

PACKING GROUP II
SOLID HAZARDOUS MATERIALS

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Performing Activity

SMCAR - AEP
U. S. Army Armament Research, Development
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FINAL

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INTRODUCTION

The Department of Transportation (DOT) per CFR 49, Parts 100-179, dated 1 October 91, requires that hazardous materials should be packed in a container that passes the Performance Oriented Packaging (POP) tests. Furthermore, these tests are to be repeated on an annual basis for items in production.

Wirebound box, part number 12590218, is being used as shipping container for 5.56mm small caliber ammunition. This box contains two(2) PA108 metal containers containing 5.56mm small arms ammunition for Squad Automatic Weapon. This box contains a maximum gross weight of 54 kg.

POP tests were conducted using additional weight(62 kg test weight) to insure container integrity. The tests were conducted in accordance with the referenced sections of CFR 49 and are valid only when the approved ammunition are packed in the PA108 container for the DOD(see Table). This wirebound box was tested previously and certified for 54 Kg of gross weight of Packing Group II Items. This report represents the annual retest of the wirebound box for PA108 metal container for POP certification.

TESTS PERFORMED

1. Drop Test

Section 178.603 of CFR 49 specifies that one box each should be used for each drop orientation. Five (5) boxes were used for five different orientations. Containers were tested to Packing Group II requirements.

One box each was dropped from a height of 1.2 meters (3.9 ft.) in the following orientations: flat on bottom, flat on top, flat on long-side, flat on short-side and on a corner.

2. Vibration Test

Three (3) boxes were placed on the vibrating platform and vibrated for a duration of one hour. The boxes were unrestrained except horizontally to prevent them from falling off of the platform. The peak-to-peak displacement was one inch and the frequency was 4.6 Hertz/sec. This frequency was sufficient enough to allow the package to become completely airborne, enabling a 1/16 inch (.16 cm) thick piece of strapping material to be slid underneath the package during testing.

3. Stacking Test

Section 178.606 of CFR 49 requires that the minimum height of the stack including the test sample must be 3.0 meters (10 ft). Three test samples are required.

A 3.0 meter stack height of samples is equivalent to 1,695 lbs. (771 kg) of stack weight. Three different test samples were each subjected to a stack weight of 1,695 lbs for a period of 24 hours. The samples were then inspected and examined for any damage or distortion.

PASS/FAIL (DOT CRITERIA)

A package for explosives is considered to successfully pass the drop tests if for each sample tested, no rupture of the packaging occurs.

A packaging passes the vibration test if there is no rupture or leakage from any of the packages.

A test sample passes the stacking test when no test sample leaks. No test sample may show any deterioration which could adversely affect transportation safety or any distortion likely to reduce its strength or cause instability in stacks of packages.

TEST RESULTS

1. Drop Test - Result: pass, no spillage.

The first four drops did not do any damage on any of the four boxes. On the edge drop, one of the long side of the box cracked but there was no spillage.

2. Vibration Test - Result: pass, no spillage or damage.

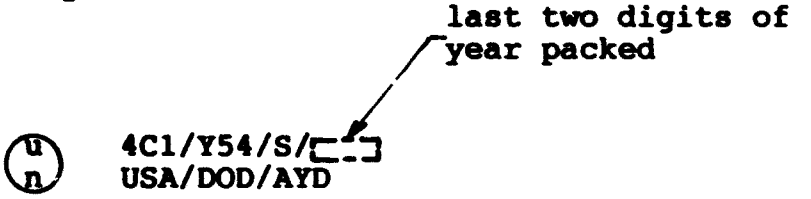
All three boxes were removed from the platform after one hour vibration. Each of the boxes was turned on its side and inspected for any damage and leakage. The packages were all tightly intact and showed no evidence of deterioration.

3. Stacking Test - Result: pass, no evidence of distortion.

The stacking test was performed with the use of a forklift to apply a dead load of 1,695 lbs on top of each of the three boxes. Each of the boxes adequately supported the applied load. No evidence of box distortion was noted.

REMARK

Based on the successful POP testing outlined in this report, the following POP symbol:



shall be applied to containers manufactured in accordance with drawing 12590218 when used to package the NSN's listed in the Table from October 1993 through October 1994.

REFERENCE MATERIAL

1. Federal Register, "49 CFR Part 107, 1 Oct 91

2. Federal Specification PPP-B-585

TEST DATA

DATA

Container(Outer):

Type: Box, wirebound
Part No.: 12590218
UN Code : 4C1
Spec No.: PPP-B-585
Material: Wood
Capacity: 28.0 liters
Dimensions
Inside: 37.47 cm x 37.70 cm x 22.86 cm
(14 3/4 in x 12 7/8 in x 9 in)

Outside: 43.18 cm x 33.97 cm x 23.81 cm
(17 in x 13 3/8 in x 9 3/8 in)

Weight(empty): 2.7 kg (6.0 lbs)

Container(inner):

Type : Box
Model No : PA108
Spec No: : MIL-C-70628
Material : Metal
Capacity : 10.8 liters
Dimensions:

Inside : 30.16 cm x 17.15 cm x 20.84 cm
(11 7/8 in x 6 3/4 in x 8 13/64 in)

Outside : 32.78 cm x 18.53 cm x 22.62 cm
(12 29/32 in x 7 19/64 in x 8 29/32 in)

Weight : 3.0 kg (6.0 lbs)
Closure(Method/Closure): Hinged Lid

PRODUCTS :

Identification No.	:	See Table
UN Packing Group	:	II
Physical State	:	Solid
Amount per Container	:	See Table

TEST MATERIALS:

Name	:	Simulated Weights and Sand
Physical State	:	Solid
Size	:	10 in x 3 in x 3 in or 2 in dia x 7/8 in thick or granulated sand
Quantity	:	Twelve(12) lead weights or lead tablets or 136 lbs
Dunnage	:	Polyethylene foam per PPP-C-1752
Gross Weight	:	136 lbs(62 kg)

TABLE

Line No.	DODIC or NALC	NSN	HM Item	Type	HC	UN No.	LBS/BX	KG/BX
1	A064	1305-01-252-0153	5.56mm	Ball TR	1.4S	0012	75	34
2	A062	1305-01-258-8692	5.56mm	Ball	1.4S	0012	75	34
3	A075	1305-01-258-8694	5.56mm	Blank	1.4S	0014	57	26